

### **Amendments to the Claims:**

The below listing of claims will replace all prior versions, and listing, of claims in the application:

### **Listing of Claims:**

1. (currently amended) A method for generating multiplier coefficients for a (1:m) mixer, comprising the ~~following~~ steps of:

- (a) performing recursive calculating calculation of a multiplier set (MS);
- (b) selecting a multiplier group (MG), consisting of a number of multipliers, from the calculated multiplier set (MS) in dependence on a predetermined signal/noise ratio ( $SNR_{NOM}$ ) of the mixer; and
- (c) writing multiplier coefficients (MC) into a memory of the mixer in accordance with the selected multiplier group (MG).

2. (currently amended) The method as ~~claimed~~ recited in claim 1, wherein the mixer is comprises a 1:10 mixer, and ~~in which~~, during the step of recursive calculation, after initialization of a first multiplier  $V_0$  of the multiplier set (MS) to zero ( $V_0 = 0$ ) and initialization of a second multiplier  $V_1$  of the multiplier set (MS) to one ( $V_1 = 1$ ), the further multipliers of the multiplier set (MS) are calculated in accordance with the following recursion rule:

$$V_{i+2} = V_i + V_{i+1} \text{ for all } i = 0, 1, 2 \dots i_{max}$$

3. (currently amended) The method as ~~claimed~~ recited in claim 2, wherein the step of selecting a multiplier group (MG) comprises:

selecting a multiplier group (MG) from the multiplier set (MS) consisting of two multipliers ( $V_i, V_{i+1}$ ) ~~is selected from the multiplier set (MS)~~, the run index  $i$  of which produces a signal/noise ratio

$$(\text{SNR}) = 20 \log \left[ \frac{1 + \sqrt{5}}{2} \right]^2 \cdot \left( i + \frac{1}{2} \right)$$

which that is higher than the predetermined signal/noise ratio ( $\text{SNR}_{\text{NOM}}$ ) of the mixer.

4. (currently amended) The method as ~~elaimed~~ recited in claim 3, wherein the step of writing multiplier coefficients into a memory of the mixer comprises:

writing the following multiplier coefficients (MC) ~~are written~~ into the memory of the mixer:

$$\text{MC} = (0, V_i, V_{i+1}, V_{i+1}, V_i, 0, -V_i, -V_{i+1}, -V_{i+1}, -V_i).$$

5. (currently amended) The method as ~~elaimed~~ recited in claim 2, wherein the step of selecting a multiplier group (MG) comprises:

selecting a multiplier group (MG) from the multiplier set (MS) consisting of three multipliers ( $V_i, V_{i+1}, V_{i+2}$ ) ~~is selected from the multiplier set (MS)~~, the run index  $i$  of which produces a signal/noise ratio

$$(\text{SNR}) = 20 \log \left[ \frac{1 + \sqrt{5}}{2} \right]^2 \cdot (i + 1)$$

which that is higher than the predetermined signal/noise ratio ( $\text{SNR}_{\text{NOM}}$ ) of the mixer.

6. (currently amended) The method as ~~elaimed~~ recited in claim 5, wherein the step of writing multiplier coefficients into a memory of the mixer comprises:

writing the following multiplier coefficients (MC) ~~are written~~ into the memory of the mixer:

$$\text{MC} = (V_i, V_{i+2}, 2*V_{i+2}, V_{i+2}, V_i, -V_i, -V_{i+2}, -2*V_{i+2}, -V_{i+2}, -V_i).$$

7. (currently amended) The method as ~~claimed~~ recited in claim 1, wherein the mixer ~~is comprises~~ a 1:8 mixer, and ~~in which,~~ during the step of recursive calculation, after initialization of a first multiplier  $V_0$  of the multiplier set to zero ( $V_0 = 0$ ) and initialization of a second multiplier  $V_1$  of the multiplier set (MS) to one ( $V_1 = 1$ ), the further multipliers of the multiplier set (MS) are calculated in accordance with the following recursion rule:

$$V_{i+2} = V_i + V_{i+1}$$

$$V_{i+3} = V_i + V_{i+2}$$

for all even-numbered  $i = 0, 2, 4 \dots i_{\max}$ .

8. (currently amended) The method as ~~claimed~~ recited in claim 7, ~~in which~~ wherein the step of selecting a multiplier group (MG) comprises:

selecting a multiplier group (MG) from the multiplier set (MS) consisting of two multipliers ( $V_i, V_{i+1}$ ) ~~is selected from the multiplier set (MS)~~, the run index  $i$  of which produces a signal/noise ratio

$SNR = 20 \log (1 + \sqrt{2}) * i$  ~~which~~ that is higher than the predetermined signal/noise ratio ( $SNR_{NOM}$ ) of the mixer.

9. (currently amended) The method as ~~claimed~~ recited in claim 1, wherein the step of writing multiplier coefficients into a memory of the mixer comprises:

writing the following multiplier coefficients (MC) ~~are written~~ into the memory of the mixer:

$$MC = (0, V_i, V_{i+1}, V_i, 0, -V_i, -V_{i+1}, -V_i)$$

10. (currently amended) The method as ~~claimed~~ recited in claim 7, ~~in which~~ wherein the step of selecting a multiplier group (MG) comprises:

selecting a multiplier group (MG) from the multiplier set (MS) consisting of two multipliers ( $V_i, V_{i+1}$ ) ~~is selected from the multiplier set (MS)~~, the run index  $i$  of

which produces a signal/noise ratio  $SNR = 20 \log [1 + \sqrt{2}] (i + 1)$  ~~which that~~ is higher than the predetermined signal/noise ratio ( $SNR_{NOM}$ ) of the mixer.

11. (currently amended) The method as ~~claimed~~ recited in claim 10, ~~in which~~ wherein the step of writing multiplier coefficients into a memory of the mixer comprises:

writing the following multiplier coefficients (MC) ~~are written~~ into the memory of the mixer:

$$MC = (V_i, V_{i+2}, V_{i+2}, V_i, -V_i, -V_{i+2}, -V_i)$$

12. (currently amended) The method as ~~claimed~~ recited in claim 1, wherein the mixer is comprises a 1:12 mixer, and ~~in which,~~ during the step of recursive calculation, after initialization of a first multiplier  $V_0$  of the multiplier set (MS) to one ( $V_0 = 1$ ) and initialization of a second multiplier  $V_1$  of the multiplier set (MS) to one ( $V_1 = 1$ ), the further multipliers of the multiplier set (MS) are calculated in accordance with the following recursion rule:

$$V_{i+2} = V_i + 2 \cdot V_{i+1}$$

$$V_{i+3} = V_i + V_{i+1}$$

$$V_{i+4} = V_i + 2 \cdot V_{i+2}$$

$$V_{i+5} = V_i + 3 \cdot V_{i+1}$$

for all  $i = 0, 4, 8 \dots i_{max}$

13. (currently amended) The method as ~~claimed~~ recited in claim 12, ~~in which~~ wherein the step of selecting a multiplier group (MG) comprises:

selecting a multiplier group (MG) from the multiplier set (MS) consisting of two multipliers ( $V_i, V_{i+2}$ ) ~~is selected from the multiplier set (MS)~~, the run index  $i$  of

which produces a signal/noise ratio  $SNR = 20 \log \left[ \sqrt{2 + \sqrt{3}} \right] \cdot (i + 2)$  ~~which~~ that is higher than the predetermined signal/noise ratio ( $SNR_{NOM}$ ) of the mixer.

14. (currently amended) The method as ~~claimed~~ recited in claim 13, ~~in which~~ wherein the step of writing multiplier coefficients into a memory of the mixer comprises:

writing the following multiplier coefficients (MC) ~~are written~~ into the memory of the mixer:

$$MC = (0, V_i, V_{i+2}, 2*V_i, V_{i+2}, V_i, 0, -V_i, -V_{i+2}, -2*V_i, -2*V_{i+2}, -V_i).$$

15. (currently amended) The method as ~~claimed~~ recited in claim 12, ~~in which~~ wherein the step of selecting a multiplier group (MG) comprises:

selecting a multiplier group (MG) from the multiplier set (MS) consisting of two multipliers ( $V_{i+3}$   $V_{i+4}$ ) ~~is selected from the multiplier set (MS)~~, the run index  $i$  of which produces a signal/noise ratio  $SNR = 20 \log \left[ \sqrt{2 + \sqrt{3}} \right] \cdot (i + 5)$  ~~which~~ that is higher than the predetermined signal/noise ratio  $SNR_{NOM}$  of the mixer.

16. (currently amended) The method as ~~claimed~~ recited in claim 15, ~~in which~~ wherein the step of writing multiplier coefficients into a memory of the mixer comprises:

writing the following multiplier coefficients (MC) ~~are written~~ into the memory of the mixer:

$$MC = (V_i, V_{i+3}, V_{i+4}, V_{i+4}, V_{i+3}, V_i, -V_i, -V_{i+3}, -V_{i+4}, -V_{i+4}, -V_{i+3}, -V_i).$$

17. (currently amended) The method as ~~claimed~~ recited in ~~one of the preceding claims~~ claim 1, ~~wherein~~ further comprising the step of:

resolving the multiplier multipliers of the multiplier groups (MG) ~~are resolved~~ into Horner coefficients.

18. (currently amended) A mixer for mixing a digital input signal with a sampled sinusoidal signal, comprising:

(a) a multiplier unit for multiplying the digital input signal by multiplier coefficients (MC);

(b) ~~and~~ a coefficient memory for storing multiplier coefficients (MC) which can be applied to the multiplier unit by means of an address generator, and

(c) ~~and comprising~~ a connectable coefficient generator for generating the multiplier coefficients (MC) by recursive calculation of a multiplier set (MS) from which a multiplier group (MG) consisting of a number of multipliers is selected in dependence on a predetermined signal/noise ratio  $SNR_{NOM}$  of the mixer and corresponding multipliers (MC) are written into the coefficient memory.

19. (currently amended) ~~The~~ A mixer for mixing a digital input signal with a sampled sinusoidal signal, comprising:

(a) a calculating circuit for calculating multipliers (MC) of a multiplier group (MG), the calculating circuit having ~~which exhibits~~ a number of dividing circuits for dividing the digital input signal applied to an input of the mixer, and a number of switchable adders/subtractors, wherein [-] ~~the~~ dividing factors of the dividing circuits ~~being~~ are Horner coefficients of the resolved multipliers (MC) of the multiplier group (MG), and [-] ~~the~~ adders/subtractors ~~being~~ are controlled in dependence on a first control bit (SUB/ADD) read out of a memory of the mixer;

(b) a demultiplexer for switching through a zero value or the ~~multiplier~~ multipliers (MC) calculated by the calculating circuit in dependence on a second control bit (zero) read out of the memory; and ~~comprising~~

(c) a sign circuit for outputting the positive or negative value switched through by the demultiplexer to an output of the mixer in dependence on a third control bit (SIGN) read out of the memory.

20. (currently amended) The mixer as ~~claimed~~ recited in claim 19, wherein the dividing circuits are ~~comprise~~ shift registers.

21. (currently amended) The mixer as ~~claimed~~ recited in claim 19, ~~wherein~~ further comprising:

an address generator ~~is provided~~ for reading out the control bits from the memory.

22. (currently amended) The mixer as ~~claimed~~ recited in claim 21, wherein the memory ~~is~~ comprises a read-only memory (ROM).

23. (currently amended) The mixer as ~~claimed~~ recited in claim 21, wherein the memory is programmable.